

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of:)	
)	PS Docket No. 10-255
Framework For)	
Next Generation 911 Deployment)	

COMMENTS OF INTRADO INC. AND INTRADO COMMUNICATIONS INC.

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SUMMARY

While the Commission's effort to understand the capabilities and transition issues related to next generation 9-1-1 (NG9-1-1) is commendable, its inquiry emanates from a flawed assumption that NG9-1-1 will be based upon the National Emergency Number Association's (NENA) *Detailed Functional and Interface Specification for the NENA i3 Solution – Stage 3* ("i3").¹ While the concepts of i3 are valuable, it does not represent an acceptable, fully developed, end-to-end NG9-1-1 system—and it does not accommodate transition from legacy E9-1-1. Essentially, NENA proposes an Emergency Service IP network (ESInet) for an all IP communications environment with dramatically different functionality than that which exists today. i3 does not provide for traditional wireline and wireless 9-1-1 communication methods—including SMS text messaging; it shifts location acquisition and validation to the Originating Service Providers (OSPs) without considering the financial and policy implications of such a fundamental change; and it has not benefited from the ANSI-accredited standards process. With these infirmities, the Commission should not move forward with i3 as the foundation of the nation's future public safety system. Rather, the Commission should reset its inquiry and merge its consideration of NG9-1-1 architecture and transition issues with that of its inquiry into the broader transition of communications from circuit-switched to all IP networks.

¹ NENA 08-003, Version 1.0, Public Review Version, (December 22, 2010).

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I. INTRODUCTION

Intrado Inc. and Intrado Communications Inc. (together, Intrado) respectfully submit these comments in response to the Federal Communication Commission’s (FCC or Commission) Notice of Inquiry (NOI) on the Framework for Next Generation 911 Deployment adopted and released December 21, 2010.²

The Commission’s NOI encompasses broad issues related to NG9-1-1 including technical, operational, legal and public policy issues impacting callers at one end of the emergency calling system, first responders at the other end, and a complex array of delivery systems in between. Intrado values the Commission’s interest and effort in exploring the workings and implications of end-to-end NG9-1-1, and under other circumstances, it would comment on many issues at the outset—and expects to do so in due course. However, one issue is so critical and so fundamental to a successful NG9-1-1 system that it must be addressed up front in isolation. It appears that the Commission has predicated its entire inquiry on the

² *In the Matter of Framework for Next Generation 911 Deployment*, Notice of Inquiry, PS Docket No. 10-225, FCC 10-200 (rel. December 21, 2010), 76 Fed. Reg. 2297 (January 13, 2011).

assumption that i3, NENA's proposed architecture for NG9-1-1 (prematurely promoted as *the* NG9-1-1 standard), is the comprehensive and well-defined document on which the Commission will base its findings and rulings. Such an assumption would be badly misplaced. While i3 proposes many good concepts and holds promise, it presents a multitude of issues, including:

- It is but one vision of NG9-1-1, one that does not represent a fully developed, end-to-end NG9-1-1 model;³
- Its scope is limited to the development and implementation of an Emergency Service IP network (ESInet);
- It ignores the need to integrate wireless and wireline 9-1-1 traffic;
- It tacitly eliminates overall 9-1-1 system management ... a critical component of today's E9-1-1 system that is well-established and defined;
- It fails to align with the broader communications industry;
- It is revolutionary but provides no direction for an accompanying, requisite evolution;⁴
- It precludes interim life-saving solutions such as SMS text messaging;
- It is fraught with untested assumptions and missing pieces; and
- It has not been through the rigors of a standards development process from an accredited Standards Development Organization (SDO).

Such an approach compromises competitive and technological neutrality and in the process threatens the public's safety and security.

³ National Emergency Number Association Technical Committee Chairs, *Detailed Functional and Interface Specification for the NENA i3 Solution – Stage 3*, 17 (December 22, 2010). (NENA i3 or i3) ("NENA i3 introduces the concept of an Emergency Services IP Network (ESInet) which is designed as an IP-based internetwork (network of networks) that can be shared by all public safety agencies that may be involved in any emergency").

⁴ Following the release of this NOI, NENA issued a publication that apparently recognizes i3's lack of specifications for the transition from legacy E9-1-1 to NG9-1-1. NENA either redefined NG9-1-1 or replaced it with "NG9-1-1 Baseline," in stating that, "i3 is on a path to an end state i3 architecture ... and Baseline NG9-1-1 must include functions of today's E9-1-1 system" *Baseline Next Generation 9-1-1 Description* (February 22, 2011), available at <http://www.nena.org/ng911-project/baseline>.

II. DISCUSSION

A. ANSI standards are the necessary and appropriate foundation for next generation 9-1-1.

Technical standards provide the underpinnings of seamless and reliable wire and radio communications and are central to the deployment of all next generation networks (NGNs) as well as the applications and services they will deliver. Standards specify what either side of an interface must do to communicate with the other—defining what each component must do to be able to send and receive information. In the process of defining the standard for each component, other relevant factors are also determined, e.g., the appropriate response of each component and how each device inter-operates to fulfill its role in the system. Standards also play an important role in the planning and evolution of new communications systems by creating and defining system interoperability and making documentation available for use in future problem solving. Well-defined standards—those that are clearly specified but not overly limiting—enhance competition and innovation by allowing multiple vendors to create system-compatible components on either side of the interfaces. Once a standard is made public, any company can produce equipment and seek to have it certified against the standard. With competition, prices are driven down, creating both economies of scale and scope.

Standards development for the NG9-1-1 system is a work-in-progress. The work of standards committees in developing standards for an entirely new system, such as an *end-to-end* NG9-1-1 system, is a massive and lengthy undertaking, often lasting many years. For example, the Telecommunications Industry Association (“TIA”) standards development process consists of seven multi-dimensional steps that are described in detail on the TIA website.⁵ For the national

⁵ <http://www.tiaonline.org/standards/about/index.cfm>

initiative now known as NG9-1-1, standards that are accredited by the American National Standards Institute (ANSI) are necessary and appropriate to ensure overall interoperability and to coordinate and synchronize with the broader communications network as it evolves. Because NENA is not an SDO, adoption of “pseudo standards” such as i3, without complete alignment with ANSI and other published standards, ensures that the operating environments of public safety and the rest of the world will again diverge. Divergence leads to reduced functionality, increased complexity, dramatic delays in availability of products and services, and significantly higher initial and system life costs incurred by the public safety industry.⁶

Data quality and overall system integrity are also reliant on published standards that provide 9-1-1 call takers with explicit instructions in order to timely and accurately dispatch emergency first responders. Because NG9-1-1 promises to make multimedia data available to public safety answering point (PSAP) call takers, standards must be fully defined and unambiguous. Although significant progress has been made in the standards development process for NG9-1-1, standards are not complete. Because i3 does not accommodate the interface of IP Multimedia Subsystem (“IMS”) with NG9-1-1, the Alliance of Telecommunications Industry Solutions (“ATIS”) has just initiated the development of IMS NG9-1-1 standards for originating networks that will enable the interface and migration of Originating Service Provider (“OSP”) networks to NG9-1-1 for voice and data communications. The ATIS standards development effort will require full harmonization with the i3 proposal, not

⁶ Today’s lagging 9-1-1 infrastructure often prevents service providers from bringing products certified in accordance with published standards to the United States because the first releases of these products are not created with North American 9-1-1 functionality. This requires that the United States providers pay more and delay market entry, thereby harming the American public, the U.S. economy and the 9-1-1 industry. ANSI based NG9-1-1 standards would cause better cooperation and accommodation worldwide and result in significantly more timely and cost effective public safety solutions.

just for the IMS interface but for the end-to-end NG9-1-1 system, in order for OSPs to be able to deliver emergency services calls to the NG9-1-1 system. There is little doubt that 3GPP IMS standards implementation in 3G/4G mobile networks will not only impact the i3 proposal with regard to the voice and data interface as between OSP systems, ESInets, public safety agencies and customer premise equipment (CPE), but it will also affect daily operational functions, e.g., data management and security, monitoring and reporting, and other functions.

Figure 1, below, depicts a 9-1-1 end-to end call flow to illustrate the need for holistic NG9-1-1 standardization.

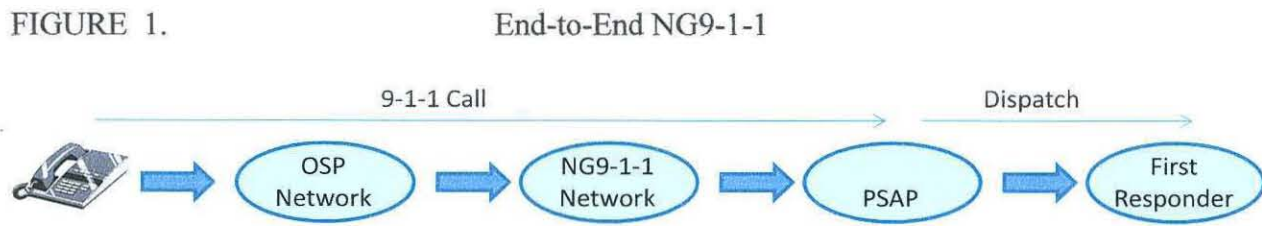


Figure 1 shows the 9-1-1 call flow from end user initiation where the OSP's network recognizes the emergency call request and passes the request to the NG9-1-1 network. The NG9-1-1 network identifies the appropriate PSAP to route the emergency call request and passes the request to the PSAP. The PSAP prioritizes and answers the emergency call request and dispatches the appropriate responding agency to the emergency incident.

But, i3 omits the OSP interface and thus entirely fails to address end-to-end interoperability. The i3 proposal simply makes suggestions about these functional elements, none of which are in place, and assumes they will routinely and voluntarily be implemented in OSP networks.

If, however, the public safety community is to eventually benefit from the work that NENA has done, the IMS interface, coupled with an SDO review of i3, including the “NG9-1-1 Network” *and* the “PSAP” as identified in Figure 1 above, must occur.

Thus, it is appropriate for this Commission to ensure that such end-to-end scrutiny and coordination is undertaken by an SDO.

B. The Commission should not premise the safety of life and property on a poorly specified definition of NG9-1-1.

1. i3 has gaping holes and disregards the largest proportion of emergency calling now and into the foreseeable future.

NENA itself defines NG9-1-1 to include the provision of “*standardized interfaces* from call and message services [which must] process *all types* of emergency calls including non-voice (multi-media) messages”⁷. i3 is currently limited to IP wireline replacement, and as a result, i3 will not work for traditional wireline 9-1-1 calls or for wireless 9-1-1 calls,⁸ notwithstanding the fact that approximately seventy percent of 9-1-1 calls now originate on wireless devices.⁹ Nor would i3 work for local or state 9-1-1 authorities contemplating deployment of a wireless network as the physical network for its ESInet. Clearly, i3 does not even meet NENA’s own definition of NG9-1-1.

⁷ See National Emergency Number Association, What is NG9-1-1, <http://www.nena.org/sites/default/files/NG9-1-1%20Definition%20Final%201.1pdf> (last visited February 26, 2010); *see also* NOI at 9.

⁸ NENA i3 at 17-19.

⁹ See *Statement of Chairman Julius Genachowski Re: Developing a Framework for Next Generation 911 Deployment, Notice of Inquiry; FCC-10-200, FCC Docket No. 10-255* (“More than two-thirds – almost 70% -- of 9-1-1 calls are made from mobile phones.”) (December 21, 2010), *available at* <http://www.fcc.gov/commissioners/genachowski/statements2010.html>.

Out of the 250-plus pages of the current i3 proposal, there are three lines that reference which codecs and/or vocoders (voice encoder/decoder) are suggested for use. This “technical specification” does not establish a standard interface or a set of required interfaces. No specific or limiting direction is provided to the telecommunications industry about what is expected of their networks for the delivery of NG9-1-1 services at the interface point to the NG9-1-1 network. Instead, i3 merely suggests the notion that a number of voice interfaces should be accommodated. Aside from this stunning omission, the lack of a specification leads to the reality that each time a service provider or equipment manufacturer implements a new (or enhanced) encoding choice to maintain the ability to serve all voice caller devices, every 9-1-1 answering position must be enhanced to support this new interface. Clearly, this is not a success path for wide scale, effective NG9-1-1 system operation. As a result of this omission, and because the designers of the i3 proposal have failed to adequately seek input from the wireless industry, the wireless industry (via 3GPP) has developed its own set of standards for 9-1-1 interoperability and operations.

2. i3 does not allow for an orderly transition to NG9-1-1.

There is no safe and effective flash cut from the traditional legacy E9-1-1 system to a new national, completely IP-based system. An orderly and safe transition to the new must accommodate critical functions of the old. Because i3 does take into account how it will work with existing elements of the legacy system, it cannot be *the* definition or solution it claims to be. In fact, it presents the same or similar infirmities that plague today’s 9-1-1 infrastructure, viz., divergence between the dedicated legacy E9-1-1 system and a public switched telephone network (PSTN) that is rapidly being replaced by NGN architectures. During the transition to NG9-1-1, divergence caused by multiple evolution paths from the various components of the

end-to-end NG9-1-1 solution will cause disconnects between originating networks trying to deliver voice, data and video into the 9-1-1 system and PSAPs trying to communicate with citizens in need of assistance.

The i3 vision of how caller location will be identified is radically different and disregards existing processes and the need for data integrity. Describing the i3 definition of NG9-1-1, the NOI states:

The end system, such as an IP-enabled phone, contacts a local directory server using the LoST (Location--to--Service Translation) protocol. The server maps the caller's civic or geospatial coordinates and the emergency service identifier to the SIP URL of a PSAP or emergency services routing proxy (ESRP), using an internal database that contains the service regions of each ESRP or PSAP. The data base may be derived from a geographic information system (GIS). The call is routed to the ESRP thus identified, which in turn use the location information, again using Lost [sic] to find another proxy closer to the PSAP serving the caller's location. This process repeats until the caller signaling request reached the correct PSAP. LoST also provides the end system with information on the emergency service and dial strings, such as 911 or 112, available at its current location.¹⁰

Today, however, 9-1-1 calls enter the 9-1-1 system based on carrier access methods that are immediately and automatically processed by a fully managed 9-1-1 system. In the i3 proposal, calls enter a very different system: one that fails to provide an equivalent location validation process. The i3 model is designed so that location information used for call routing and caller location will be delivered to the NG9-1-1 system as part of the call set-up. However, the necessary assumption to that design—that all devices can provide their location at call set-up for routing—is erroneous. Additionally, the deployment of non-integrated Emergency Call Routing Function (ECRF) using the LoST protocol runs the risk of having more participants in

¹⁰ NOI at n. 51; *see also* ¶57 (“While emergency service networks and PSAPs will continue to be operated and managed regionally, the deployment of NG9-1-1 may require a set of national infrastructure components. *Based on the current NENA NG architecture*, these may include...a national PSAP and ESInet lookup directory, called the LoST ‘forest guide.’”) (emphasis added).

the call path than are necessary or appropriate. Inescapably, exponential complexity results when: (a) entities that are inexperienced with operating emergency service systems entering the market; (b) PSAPs are expected to perform tasks well-beyond their current scope; and (c) OSPs must all figure out how to deliver location information at call set-up for emergency call routing.¹¹

i3 is equally ambiguous about how originating networks and, by extension, consumers who pay for the 9-1-1 system, are to interact with a radically different public safety network.¹² The key predicate of i3 is that OSPs will deliver location information with the 9-1-1 call. However, there is neither an obligation nor funding for the OSPs to maintain the enabling Location Information Servers (LISs) that must be constantly synchronized with other databases in order for i3 to work at all.

Because the i3 proposal is open to broad interpretation, manufacturers that rely on fully defined standards to build reliable, interoperable network equipment, hardware, software and CPE products will be stifled or misdirected down blind alleys. The result will be higher prices and disappointment for the public safety industry.

Also, 9-1-1 authorities will not have immediate access to advanced functionality (text, picture, and video) upon implementation of i3 as they have been led to believe. The i3 document fails to adequately address the fact that carriers need to first provide such advanced functionality – something they cannot yet do. The stark reality is that, if 9-1-1 authorities insist on purchasing

¹¹ NENA i3 at 64.

¹² NENA i3 at 24 (“This is an all new 9-1-1 system ... the cost of everything will change.”).

and implementing based on the i3 proposal today and many are on that trajectory – they will not get the significant increase in functionality they expect and that i3 promises.¹³

3. SMS for text to 9-1-1 is also outside the scope of i3.

By blindly adopting i3, the Commission would preclude the use of SMS for text messaging to 9-1-1 despite its proven value. And contrary to what some may say, when configured as a dedicated public safety system, SMS is a viable, reliable, interim solution for situations in which those who are in emergencies are not in a position to place a voice call to 9-1-1. Intrado's experience is instructive. Intrado, Black Hawk County, Iowa and a wireless company providing service in the area have successfully deployed a text to 9-1-1 solution. The technology employed is straightforward and utilizes systems and standards already deployed in wireless carriers' networks. The Commission should disregard criticisms based upon the conventional or unconventional use of SMS technology for requesting emergency assistance. Instead, the solution should be evaluated for what it is and what it can do. "Less-than-perfect" has been instituted in 9-1-1 before. One need look no further than wireless Phase One, followed by Phase Two; and the legacy 9-1-1 system itself exemplifies the use of a technology for a purpose other than that originally intended, done to advance the ever-evolving cause of emergency communications.¹⁴

¹³ Request for Proposals for NG-9-1-1 in Connecticut, Alabama, Florida, Texas, Vermont, and Washington reference and require, in some fashion, demand the i3 solution.

¹⁴ CAMA trunks originally developed for long distance billing provided a progressive means at the time for enhancing 9-1-1.

C. The Commission should consider NG9-1-1 architecture in general, including the i3 proposal, in conjunction with the broader network transition contemplated by Public Notice # 25.

In the release of Public Notice #25 of its National Broadband Plan docket, “Comment Sought on Transition from Circuit Switched Networks to All-IP Networks,” the Commission recognized that “[w]hile each transition is different, policy has played an important role in ensuring consumers were protected from loss of essential services and were informed of the choices presented by the transition.”¹⁵ Accordingly, the Commission sought identification of *first order policy questions* necessary to formulate “the appropriate policy framework to facilitate and respond to the market-led transition from the circuit-switched PSTN system to an IP-based communications world.”¹⁶

In response, NENA urged the Commission to open a notice of inquiry with the expressed purpose of seeking “information on the 9-1-1 system implications of such transition from the perspective of consumers, public safety governing authorities and providers of communications services, devices, and applications.”¹⁷ According to NENA, the first question should be, “[h]ow does the *transition* from the PSTN to an all IP system impact current and future 9-1-1 technologies; 9-1-1 provisioning processes; and 9-1-1 regulations, requirements and *standards*?”¹⁸ NENA acknowledged that, “in many ways, from a 9-1-1 perspective, the

¹⁵ *In the Matter of a Broadband Plan for Our Future*, Public Notice #25 GN Docket Nos. 09-47, 09-51, 09-137, 1 (Rel. December 1, 2009) (NBP PN # 25).

¹⁶ *Id.* at 1-2.

¹⁷ Comments—NBP Public Notice # 25 National Emergency Number Association, 3 (dated December 21, 2009) (Comments of NENA) (emphasis added).

¹⁸ *Id.* (emphasis added)

transition process itself, coupled with the period *in which legacy systems must co-exist with IP-based systems*, may offer the greatest challenge than the ultimate all IP world.”¹⁹

In light of the perspectives offered by the Commission and NENA, and because of the infirmities of the instant NOI, it is appropriate for NG9-1-1 to be reviewed in conjunction with the Commission’s proceeding intended to address the broader transition of communications to all IP networks. The issues in this NOI should at least include the substantive involvement of the wireline/wireless bureau(s) to ensure there is synchronization among the i3 proposal, any other viable NG9-1-1 proposal, the ATIS/3GPP standards development efforts, and to ensure there is an affirmatively-stated commitment on the part of the Commission to published standards for end-to-end NG9-1-1.

¹⁹ *Id.* at 3-4.

III. CONCLUSION AND RECOMMENDATION

The fundamental flaw with the NOI is not that it seeks to define *what* NG9-1-1 is²⁰ but that it unreasonably relies on i3 for that definition and accompanying descriptions and that, in doing so, prescribes *how* NG 9-1-1 will be deployed. This approach is tantamount to building a house of cards, constitutes significant overreach at this stage of the standards development process and must be reevaluated.”²¹ Any future evaluation should be undertaken in the context of the Commission’s overall inquiry into the transition to all IP networks. The Commission should make clear its commitment to competitively and technologically neutral policies supported by ANSI standards for the entire NG9-1-1 ecosystem. If the i3 proposal is to be given credence in this or any other docket, it must be exposed to the rigors of formal standards development processes undertaken by an accredited SDO capable of evaluating such complex, end-to-end systems.

²⁰ NOI at ¶ 18-26.

²¹ 47 U.S.C. § 151.

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